LIKELIHOOD OF CORONARY ARTERY BYPASS GRAFTING IN PATIENTS WITH NON-ST-ELEVATION ACUTE CORONARY SYNDROME: FINDING THE BEST MODEL

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BACKGROUND

- Guidelines recommend dual antiplatelet therapy (DAPT) before coronary angiography in non-ST elevation acute coronary syndromes (NSTEACS), yet coronary artery bypass (CABG) is required in up to 25% of cases
- Avoiding DAPT in patients requiring CABG is important
- Several risk scores have been developed to predict CABG in NSTEMI patients, but have not been externally validated
- We applied 4 risk scores to an independent cohort of NSTEACS patients
  - Determined risk model with best predictive value
  - Evaluated best model's performance with added variables

METHODS

- Data from TRIUMPH (24-center ACS registry; 4/05–12/08)
- 2,473 NSTEACS patients → 292 (12%) needed CABG
- Calculated individual risk scores for each patient and assessed previous risk models' discrimination and calibration
- Calculated test characteristics of best model
- To potentially improve the prediction model, TRIUMPH variables added using logistic regression with backwards selection (p<0.1 for significance)
- Internally validated reduced model with bootstrapping and optimism-corrected c-statistic

RESULTS

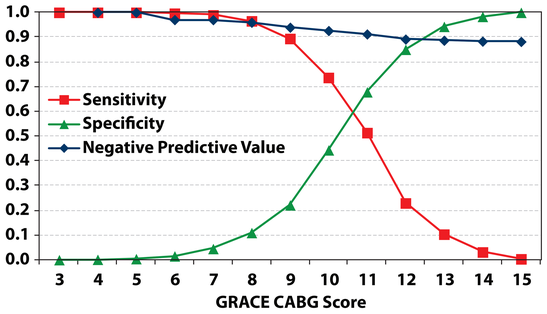
Performance of Validated Models in Predicting Need for CABG Among TRIUMPH NSTEACS Patients (best model highlighted)

	C-statistic	Hosmer-Lemeshow (p-value)	Observed vs. Expected Plot (r^2)
Modified TIMI Score	0.54	0.12	0.18
TACTICS-TIMI 18 Score	0.61	0.07	0.97 (limited data)
Poppe et. al. Score	0.61	0.02	0.75
GRACE Score	0.62	0.15	0.88

TRIUMPH Variables Significantly Associated with Likelihood of CABG in "Reduced GRACE" Model

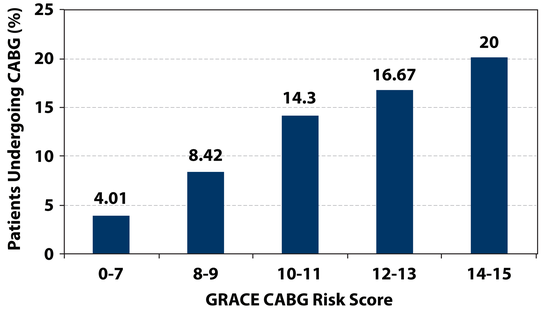
Significant Predictors	Odds Ratio (95% CI)	Non-Significant Predictors (p<0.10)
GRACE Score	1.29 (1.20, 1.39)	Marital Status Education Work Status Insurance Status Dialysis Lung Disease Diabetes Cocaine Use Warfarin Metabolic Syndrome Hemoglobin Platelets
Race (Ref: White)		
Black	0.58 (0.41, 0.82)	
Other	1.01 (0.62, 1.66)	
Body Mass Index (per 5 unit increase)	0.92 (0.83, 1.01)	
Left ventricular systolic function (Ref: Normal)		
Mild	1.53 (1.11, 2.12)	
Moderate	1.54 (1.01, 2.35)	
Severe	1.25 (0.79, 1.98)	
Reduced GRACE Score Optimism-corrected C-Statistic	0.627	

GRACE Score Test Characteristics in TRIUMPH NSTEACS Patients



GRACE Score components include:
age, heart rate, systolic blood pressure, creatinine, cardiac arrest at admission, ST segment deviation, elevated cardiac enzymes, and signs/symptoms of heart failure.

Proportion of TRIUMPH NSTEACS Patients Undergoing CABG Based on GRACE Score



LIMITATIONS

- Unmeasured confounders may still mediate CABG likelihood
- Site-level characteristics not included in model
- Ability of these models to improve outcomes was not tested

CONCLUSIONS

- Three of four CABG risk models had good predictive value among this cohort of NSTEACS patients
- The GRACE score best predicted likelihood of CABG among patients with NSTEACS
- GRACE is most useful in identifying low-risk-for-CABG patients who can receive DAPT with less concern
- Added variables did not significantly improve GRACE model

DISCLOSURES

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